

**CSC 435**  
**Project 1 – Your Very Own Baby BLAS**  
**Due 6:00 p.m., February 27, 2007**

In this project you will write highly optimized single processor C/C++ functions to do the most fundamental operations in matrix algebra:

- inner (dot) products of two vectors
- tensor product of two vectors (column vector times a row vector)
- matrix/vector multiplication (rotates the vector)
- matrix/matrix multiplication (square matrices only)

These single precision functions will be called from Fortran – and it is up to you to determine how to call these most effectively to minimize execution time. I will tell you that the calls on the FORTRAN side will look like.

`dot(N, vec1, vec2)` — dot is a single precision function

`call vvm(N, vec1, vec2, rmat)`

`call mvv(N, vec, mat, vresults)`

`call mmm(N, mat1, mat2, rmat)`

In addition, the code should be able to run on Pentium III and newer processors ( I will test on PIII and PIV processors). I am also expecting each of you to utilize a makefile for both the compilation of the code as well as creating the library. I will provide more information on this later.

When done, each of you should tar the directory(ies) containing your source code, and makefile. The source code should be well commented so I will know what improvements you made and you should also annotate your makefile so I will know what compilation flags you think work best. I will "make" your library, link it in with my own code, and run speed trials.

Grading will be as follows.

- A – Fastest code with correct results
- B – Code with correct results
- C – Incorrect Results
- D – Failure of compilation, makefile, linking
- F – Missing any components

Plagiarizing from the BLAS/Atlas libraries will not be tolerated and will wind you up in front of the honor council.